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Coccomyces neolitseae sp. nov. from Zhangjiajie, China

Qing Li[1], Yu-Xia Chen[2], Chun-Tao Zheng[1],
Dan-Dan Lu[1] & Ying-Ren Lin[2*]

[1] *School of Life Science &* [2] *School of Forestry & Landscape Architecture, Anhui Agricultural University, West Changjiang Road 130, Hefei, Anhui 230036, China*

*Correspondence to: *yingrenlin@yahoo.com*

Abstract — A fungus found on leaves of *Neolitsea levinei* from the Zhangjiajie National Forest Park in Hunan Province, China, is described as *Coccomyces neolitseae*. A description, illustration, and comments are given for this taxon. The type specimen is deposited in the Reference Collection of Forest Fungi of Anhui Agricultural University, China (AAUF).

Key words — *Rhytismataceae*, *Rhytismatales*, morphological characteristics, taxonomy, *Lauraceae*

Introduction

Coccomyces De Not. is now a large genus in the *Rhytismataceae* (Kirk et al. 2008). The ascomal external shape, size, and type of opening, the ascal shape and size, and the shape of paraphyses at the apex are regarded as the most important taxonomic characters of *Coccomyces* (Johnston 1986, Lin 1998). Index Fungorum (2015) lists 196 epithets for the genus, of which Species Fungorum (2015) accepts 106 species in *Coccomyces*. They usually occur on leaves, herbaceous stems, bark, and wood of vascular plants, especially *Ericaceae*, *Fagaceae*, and *Lauraceae* (Sherwood 1980). Some species, such as *C. guizhouensis* Y.R. Lin & B.F. Hu, *C. ledi* Rehm, *C. strobi* J. Reid & Cain, and *C. vilis* Syd. et al., may cause economically significant plant diseases (Lin et al. 1994, Rehm 1913, Reid & Cain 1961, Cannon & Minter 1984).

Recently, another new *Coccomyces* species was found on fallen leaves of *Neolitsea levinei* in the Zhangjiajie National Forest Park, Hunan Province, which we describe below.

Materials & methods

The study was based on collections made in 2010 from Hunan, China. Specimens were rehydrated in water for 15 min and ascomata and conidiomata were sliced into 10–

15 µm thick sections using a freezing microtome. The structure of the fruiting bodies was observed in 0.1% (w/v) cotton blue in phenol glycerin. The color of the internal structures of the fruiting bodies was observed in water. Measurements and drawings of asci, ascospores, and paraphyses were made from squash mounts in 5% KOH solution.

Taxonomy

Coccomyces neolitseae Qing Li & Y.R. Lin, **sp. nov.** Figs 1–6

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Differs from *Coccomyces delta* by the lack of lip cells, the existence of an excipulum, a thicker basal stroma, paraphyses that are not enlarged at the apex, shorter and thinner ascospores lacking an obvious gelatinous sheath, and the ascomata associating with conidiomata.

Type: China, Hunan, Zhangjiajie National Forest Park, Jinbianxi, on fallen leaves of *Neolitsea levinei* Merr. (*Lauraceae*), 17 August 2010, X.M. Gao & Y.R. Lin 2546 (**Holotype**, AAUF 68654).

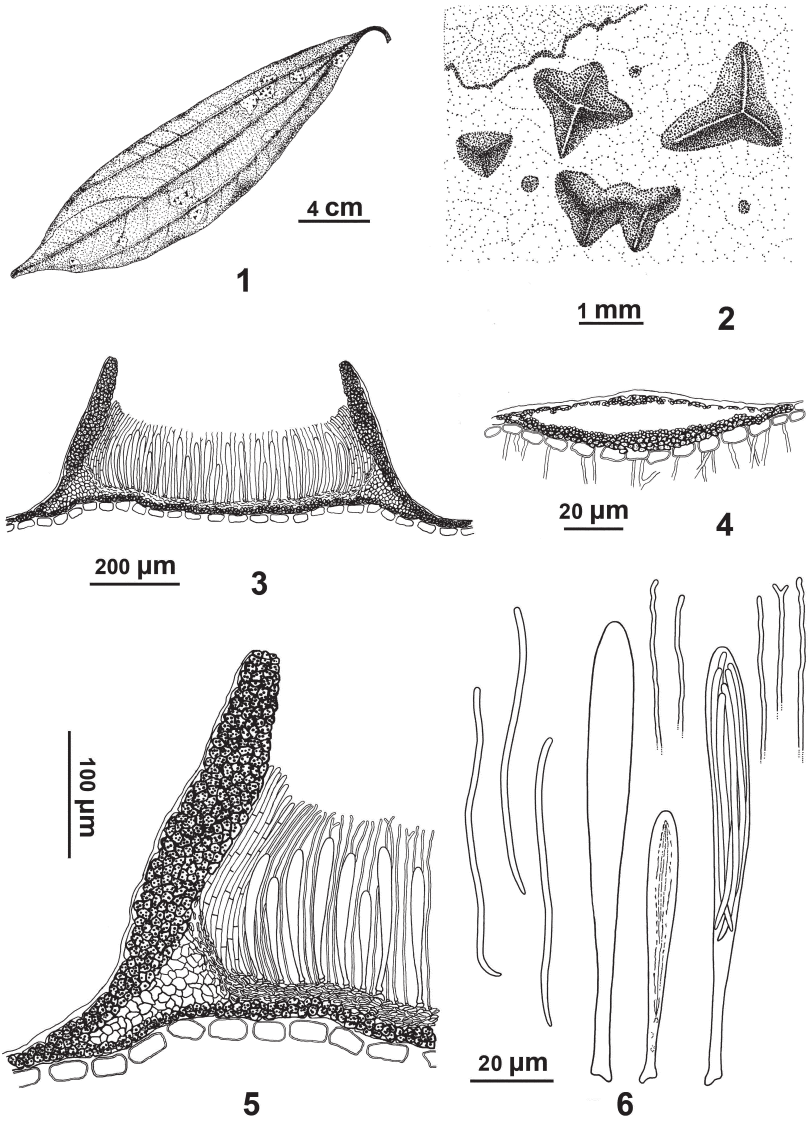
Etymology: The specific epithet refers to the host genus.

Colonies on both sides of leaves, forming irregular, yellowish-white spots 6–20 mm diam.

Zone lines frequent, dark-brown or black, thin, entirely or partly surrounding the bleached areas.

Conidiomata on both sides of leaves, predominantly on the lower side, scattered to clustered, sometimes with several coalescing. In surface view, conidiomata 110–215(–250) µm diam., subcircular, brown to black-brown, with a marked perimeter line or clearly defined edge, somewhat raising the substratum surface, discharging spores through an apical ostiole. In vertical transverse section, conidiomata intraepidermal, more or less lens-shaped. Upper wall 3.5–6.5 µm thick, dark brown, composed of tiny, thin-walled angular cells 1–1.5 µm diam. Basal wall 2.5–6 µm thick, comprised of (1–)2–3 layers of thick-walled angular cells 2–3 µm diam. Subconidiogenous layer 2.5–4 µm thick, consisting of nearly colorless, thin-walled angular cells. Conidiogenous cells and Conidia not present in material available.

Ascomata in similar positions to conidiomata on the substratum, scattered, occasionally two coalescing in the bleached spots. In surface view, ascomata 800–1200(–1600) µm diam., triangular, occasionally quadrilateral, black, with a distinct outline, moderately raising the substratum surface, with an obvious preformed dehiscence mechanism, opening by 3–4 radial splits that extend nearly to the ascomatal edge to expose the light yellow-brown hymenium. Lips absent. In median vertical transverse section, ascomata intraepidermal. Covering stroma 45–55 µm thick in the middle of the laterals, becoming thinner towards the top and the edge, connecting to the basal stroma, composed of black-brown textura angularis with thick-walled cells 6–8



Figs 1–6. *Coccomyces neolitseae* (holotype, AAUF 68654) on *Neolitsea levinei*. 1. Habit on a leaf. 2. Detail of conidiomata, ascomata, and a zone line. 3. Ascoma in median vertical transverse section. 4. Conidioma in vertical transverse section. 5. Portion of ascoma in median transverse vertical section. 6. Paraphyses, asci, and ascospores.

μm diam. Basal stroma 10–18 μm thick, consisting of textura angularis with 2–3 layers of black-brown, thick-walled cells. Internal matrix of stroma existing only between covering stroma and basal stroma, composed of colorless, thin-walled angular cells 7–12 μm diam., Excipulum well-developed, 25–35 μm wide, arising from the edge of the subhymenium, comprised of rows of hyaline, thin-walled, septate hyphae. Subhymenium 12–20 μm thick, composed of colorless textura porrecta-intricata. Paraphyses hyaline, aseptate, 120–150 × 0.8–1.4 μm, filiform, sinuate, not swollen, occasionally branched at the apex, not immersed in a gel. Asci ripening sequentially, 105–120 × 8–11 μm, clavate, long-stalked, thin-walled, apex rounded to obtuse, without circumapical thickening, J–, 8-spored. Ascospores arranged in a fascicle, 64–75 × 1.5–1.7 μm, filiform, hyaline, aseptate, gradually tapered towards the acute base, not obviously sheathed.

Host species, habitat, & distribution: Producing conidiomata and ascomata on fallen leaves of *Neolitsea levinei*; known only from the type locality, Hunan Province, China.

Comments — *Coccomyces delta* (Kunze) Sacc. is closely related to *C. neolitseae* in ascomal appearance and in the way it is embedded, as well as the characteristics of the zone lines. However, *C. delta* differs in the lack of an association of its ascomata with conidiomata, the absence of an excipulum, the presence of a fringe of periphysis-like lip cells, a much thinner (5 μm thick) basal stroma, slightly enlarged paraphysial apices, short-stalked, longer (100–150 μm) asci, and wider and longer (80–100 × 2 μm) ascospores with a narrow mucous sheath (Sherwood 1980). *Coccomyces delta* has been observed on a wide range of woody plants, mostly in the Europe and Atlantic islands, but with some records from China (Sherwood 1980; Lin et al. 2012). In our Chinese materials, the paraphyses are septate and covered by a thin mucous coating, and the asci and ascospores are shorter than described by Sherwood (1980).

Coccomyces limitatus (Berk. & M.A. Curtis) Sacc. is easily distinguished from the new species by trilateral to pentagonal ascomata, a covering stroma that does not extend as far as the basal stroma, a well-developed internal matrix comprising loose hyphae and crystals, a wider (50 μm thick) excipulum arising from inner layers of upper wall, wider (2–3 μm wide) paraphyses with swollen upper apices, and dissimilar asci and ascospores. Its asci are 4–5.6 μm, sometimes with an apical thickening, and the ascospores are only 0.8–1 μm wide and do not taper to the base (Johnston 1986).

Coccomyces neolitseae resembles *Coccomyces huangshanensis* Y.R. Lin & Z.Z. Li in the nature of the internal matrix of stroma and the color of the exposed hymenium, but *C. huangshanensis* has a much thinner covering stroma (8–17

μm) covered by heavily carbonized tissue at the opening that thins gradually towards the ascomal edge, short and hyaline periphysoids, and ascospores sometimes with a gelatinous cap at the apex (Lin et al. 2000).

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Literature cited

Cannon PF, Minter DW. 1984. *Coccomyces vilis*. CMI Descr. Path. Fungi & Bact. no. 792.

Index Fungorum. 2015. www.indexfungorum.org [viewed online on 23 March 2015].

Johnston PR. 1986. *Rhytismataceae* in New Zealand 1. Some foliicolous species of *Coccomyces* de Notaris and *Propolis* (Fries) Corda. New Zealand J. Bot. 24: 89–124. http://dx.doi.org/10.1080/0028825X.1986.10409723

Kirk PM, Cannon PF, Minter DW, Stalpers JA. 2008. Ainsworth & Bisby's dictionary of the fungi, 10th ed. CAB International. Wallingford. 771 p.

Lin YR. 1998. Studies on *Coccomyces* de Notaris and *Neococcomyces* gen. nov. in China. [Ph.D. thesis; in Chinese]. Northeast Forestry University. Harbin. 98 p.

Lin YR, Liu HY, Tang YP, Hu BF. 1994. Two new species of the genus *Coccomyces* from China [in Chinese]. Acta Mycol. Sin. 13: 8–12.

Lin YR, Li ZZ, Xie YS, Liang SW. 2000. Studies on the genus *Coccomyces* from China III [in Chinese]. Mycosystema 19: 449–453.

Lin YR, Liu HY, Hou CL, Wang SJ, Ye M, Huang CL, Xiang Y, Yu SM. 2012. Flora Fungorum Sinicorum, vol. 40, *Rhytismatales* [in Chinese]. Science Press. Beijing. 261 p.

Rehm H. 1913. *Ascomycetes* novi VI. Ann. Mycol. 11: 150–155.

Reid J, Cain RF. 1961. The genus *Therrya*. Can J. Bot. 39: 1119–1129. http://dx.doi.org/10.1139/b61-098

Sherwood MA. 1980. Taxonomic studies in the *Phacidiales*: The genus *Coccomyces* (*Rhytismataceae*). Occ. Pap. Farlow Herb. Crypt. Bot. 15: 1–120.

Species Fungorum. 2015. www.speciesfungorum.org [viewed online on 23 March 2015].